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**RESPONSIVENESS SUMMARY
NOTICE OF DELETION**



**REGION 4
ATLANTA, GEORGIA**

**LEES LANE LANDFILL SITE
LOUISVILLE, KENTUCKY**

**Responsiveness Summary
Notice of Deletion
National Priorities List
Lees Lane Landfill Site
Louisville, Kentucky**

The U.S. Environmental Protection Agency (EPA) established a public comment period from February 14, 1992 through March 16, 1992 for interested parties to comment on the Revised Notice of Intent to Delete the Lees Lane Landfill Site from the National Priorities List. This Responsiveness Summary provides a summary of major comments that were raised during the public comment period on the Revised Notice of Intent to Delete. EPA's responses are also provided in this document.

Two comment letters were received, one from the Kentucky Resources Council opposing the Site's deletion, and one from the Kentucky Natural Resources and Environmental Protection Cabinet. Three major issues were raised, and are provided below along with EPA's responses.

1. The Kentucky Resources Council (KRC) expressed its opposition to the Site's deletion stating that the remedy implemented did not appear to be fully protective of the environment. The Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) did not oppose the deletion but was concerned about the lack of remediation achieved at the Site by stating that the selected remedy provided only for bank stabilization, a gas collection system, and limited removal at selected hot spots. It was also stated that the hazardous waste that remain at the Site have not been addressed by the remedy, that contamination was being released to the groundwater and the adjacent Ohio River, and that surface contamination has also remained unaddressed.

EPA's Response:

While it is true that waste material other than the drums was not removed from the landfill, the selected remedy clearly protects human health and the environment by mitigating human exposures to contaminated site media and significantly reducing continued uncontrolled releases to the environment.

More specifically, mitigation of releases to the environment was achieved by the following actions: (1) hot spots were capped and seeded; (2) 296 drums were properly disposed of; (3) the central tract of the landfill, which contained the most fill material, was cleared of debris and vegetation, graded for proper drainage, and clay capped and seeded to

reduce leachate production due to percolation; (4) riprap was placed on the embankment of the central tract to prevent erosion and washout by the Ohio River, thus mitigating the threat of further releases of buried waste directly into the Ohio River; (5) the gas collection system was refurbished and county workers were instructed how to maintain the gas collection system motor and its well heads; five gas monitoring wells were constructed to monitor the performance of the gas collection system; and (6) two additional monitoring wells were constructed in the Riverside Gardens Community to monitor groundwater quality.

The following paragraphs outline the actions that the Agency has taken to mitigate the threat of human exposure to site contaminants, and minimize the continued release of contaminants to the environment:

Groundwater

A significant potential public health threat was posed by the Site's potentially detrimental effect on groundwater quality and through the possibility that leachate from the landfill might contaminate Riverside Gardens residential wells located to the east of the site at some future date. During the Remedial Investigation (RI), groundwater beneath the landfill was found to contain several contaminants, most notably chromium, lead, and benzene, in levels which exceeded EPA's Interim Primary Drinking Water Regulations. Off-site evaluation of groundwater through either existing wells or test wells showed no evidence of contaminant migration from the landfill in concentrations above health-based levels and that elevated chromium, manganese, and iron levels were also detected in wells upgradient relative to the Site.

The RI Report concluded that although the Site is contributing to the elevated contaminant levels observed, the Site is probably not the only source of contamination. This is because both upgradient wells and downgradient wells contained these contaminants, indicating that their presence may be widespread in the deeper portions of the aquifer. The presence of contaminants in groundwater probably results in part from leachate migration from the landfill. Leachate production in the landfill occurs when the river and/or the water table rises to intersect the buried fill material and when water from the landfill surface drains down through buried fill material.

The RI Report further concluded that groundwater flow from the site is predominantly towards the Ohio River with discharge into the river. This was verified through continuous water level recorders placed on monitoring wells during the RI. It was also determined that during sustained periods of high flow in the Ohio River, groundwater flow may reverse, thus, causing contaminant migration to flow inland. Still, the net overall flow of site groundwater is towards the Ohio River, despite temporary reversals of gradients that may result during prolonged high river stages.

Since elevated chromium and other contaminant levels were detected in upgradient wells and no downgradient offsite impacts were evident, no remediation for the Site-related groundwater was recommended. Groundwater treatment through extraction was also determined to be impractical and/or ineffective because extraction of groundwater from beneath the Site by pumping would inadvertently extract large volumes of Ohio River water. A monitoring program was implemented instead to establish baseline conditions at the Site and to serve as an early warning system should site conditions change. Groundwater east of the landfill is monitored for exceedences of health based levels, while groundwater Alternate Concentration Limits (ACLs) were established for groundwater discharging to the Ohio River. The ACLs established for the Site are fully protective of human health and the environment.

Soils and Sediments and Hot Spot Capping

Concentrations of the critical contaminants observed in Site soils and sediment during the RI did not represent a significant threat except in two localized areas where high levels of the contaminants (chromium and lead) were observed. These were detected along an access road indicating sporadic dumping. These hot spots were neither widespread nor typical of general site conditions but did represent a significant dermal exposure threat to the largely uncontrolled access to the Site by locals for recreational use (i.e. target shooting). Capping of these hot spots mitigated this potential dermal exposure route. These and other "hot spots", as evidenced by stressed vegetation, were covered (capped) to minimize human exposure at locations mutually agreed upon by EPA and KNREPC. Exposed trash in the southern tract was covered with clay and soil.

Riverbank Stabilization

The riverbank stabilization constructed by the Agency should prevent further erosion of the riverbank and subsequent exposure of the landfill materials by protecting the landfill from slowly washing into the Ohio River during the peak rainfall conditions. It should be noted that erosion and bank failure, in which large sections of a bank slides into the river, were occurring prior to construction of the embankment protection.

The landfill clay cap was constructed over the central tract, in addition to that of the riverbank construction, in order to provide an effective cover and erosion control. The cap serves to decrease rainwater infiltration and percolation through fill material and thus reduce the production of leachate.

The Agency acknowledges the concern that the response actions taken at the Lees Lane Landfill Site did not reduce the toxicity or volume of wastes remaining in the landfill. EPA's response action did, however, significantly reduce the possibility of continued releases to the environment through the embankment protection measures, and mitigate contaminant exposures to humans through dermal contact with contaminants in soils by capping hot spot areas. Similarly, the gas collection system refurbishment measures will continue to effectively intercept landfill gases. The groundwater and soil gas monitoring program has been implemented to provide an early warning should concentrations of contaminants increase.

2. The KNREPC commented that the drums of hazardous waste that they discovered and removed from the Site in March 1992 were apparently left from the original disposal activities but never addressed by EPA's response action.

EPA's Response:

The drums that were removed by KNREPC in March 1992 were located less than 400 feet from one of five gas monitoring wells that were sampled four times during the O&M activities conducted by the Agency. The three drums were clearly visible from an adjacent moderately traveled access road (Putnam Street) located approximately 100 feet away. The Agency firmly believes that the drums that KNREPC removed from the

Site were placed there within several months preceding their discovery and subsequent removal, and were not left on the Site at the close of EPA's response actions or during the conduct of O&M activities.

3. The KRC and the KNREPC expressed that the scope of waste disposal activities was never fully characterized at the Site. The KNREPC stated that drilling at the Site never established the exact depths of waste contained in this former sand and gravel quarry.

EPA's Response:

The volume of waste and fill material buried in the landfill was estimated at 2,400,000 cubic yards. This estimate, as reported in the RI Report, was based on well logs, aerial photos, historical aerial photos, geophysical surveys, and topographical maps. Little information is available as to the actual composition of the wastes, but the depth of excavations at the site sand and gravel pits was reportedly 25 feet or less. Municipal, industrial, and commercial wastes are known to have been disposed of in the landfill but few records exist as to the type or location of specific wastes. Wastes are very likely commingled within various pits.

For characterization purposes, the landfill site was divided into three tracts: the northern tract, central tract, and southern tract. A total of twenty test pits were dug to designate the boundary of the fill areas in the tracts upon which the river embankment and the cap, now covering the central tract, were built; five each in the northern and southern tracts, and ten in the central tract.

The landfill material was found to be concentrated in the central tract with some encroachment on the southern tract. The lateral extent of fill material burial was further defined by the following: (1) Observation of landfill material on the river bank in the central tract; (2) the lack of landfill material on or close to the river banks at the northern and southern tracts; (3) the indication of larger, more established, mature trees and vegetation in the northern and southern tracts relative to that found in the central tract; (4) the observation that landfill material in the southern tract was set back from the river bank. These factors dictated the horizontal extent of the riprap placement to the

bankline of the central tract in order to mitigate the threat of contaminants entering directly into the Ohio River as the result of embankment erosion.